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A Process and a Device to Allow Direct Access for Individual Subscribers to a Digital Cellular Phone Network with Existing Cell Broadcast Services

Field of the Invention

The invention concerns a process and a device to allow direct access for individual subscribers to a digital cellular phone network with existing cell broadcast services.

Background of the Invention

Subscribers in cellular phone networks have the possibility of sending short messages. Normally, a short message is sent to exactly one other cell-phone subscriber or exactly one receiver on the fixed network. The cell broadcast service, on the other hand, makes it possible to send short messages to as many subscribers as desired in a defined area (radio principle). These messages usually originate with information providers that are connected to the Cell Broadcast Center (CBC) over a fixed network connection. It has been possible thus far for an individual subscriber to receive Cell Broadcast messages over his cellular phone set, but it is not possible for him to reach several other subscribers directly over his set using Cell Broadcast.

EP-A-0 851 697 discloses a system for making direct access possible for individual subscribers to a digital cellular phone network with existing Cell Broadcast services. The subscriber's cellular phone sets are already equipped to exchange point-to-point short messages with a short-message center over the cellular phone network, whereby one forwards short messages declared a Cell Broadcast message to a Cell Broadcast Center, and the message is beamed out over the cellular phone network as a Cell Broadcast.

The problem of the invention is to design a method and a device to make direct access possible for individual subscribers to a digital cellular phone network with existing cell broadcast services in a more comfortable and secure way.

Summary of the Invention

The invention solves this problem with the features in the subclaims.

The invention combines both services of point-to-point short-message connection (SMS PP) and cell broadcast (CB). A coupling instance in the form of a server or gateway accepts point-to-point short messages, does the necessary tests, adjustments and conversions of the messages and forwards them to the Cell Broadcast Center by means of a process valid for Cell Broadcast Centers. It can be that senders in the cellular phone networks are authenticated, since they go through the regular authentication procedure when they log onto the cellular phone network. The invention provides an authentication component and/or filter component in the coupling instance.

It is essential—and the main advantage compared to similar solutions—that the properties necessary for using the process already exist in the cellular phone sets.

According to the invention, a regular short message (SMS PP) is sent via the short-message center (SMSC) to a certain “subscriber,” in this case the coupling instance. There, the messages are processed and sent to the Cell Broadcast Center, through which a Cell Broadcast call is initiated in a certain broadcast area.

It is also essential that the parameters necessary for using call broadcast, like for example giving the area into which the broadcast message is to be beamed, can be specified in the message text. The broadcast areas can be a single point cell in the minimum case, or the whole area which the cellular phone network serves in the maximum case.

But, if need be, the necessary parameters can also be added by the coupling instance. For example, a certain broadcast area can be preselected and set by the subscriber, the network operator or provider and then inserted automatically into the broadcast message by the coupling instance.

The strategy whereby this happens can be chosen relatively freely, but it can also be chosen depending on the finer workings of the intended application. Basically all applications in which I:N communication relations are important can be made to run more efficiently.

Basically, the invention uses the accounting methods that already exist on the cellular phone network, i.e., accounting methods on the actual cellular phone network can also be used in SMSC and CBC for the process in the invention.

But the coupling instance can also be provided with accounting components of its own. The process can be used in all cellular phone networks in which point-to-point messages and broadcast messages are offered or supported.

The invention will be explained in greater detail below with reference to the examples of embodiment and a figure in a drawing. Other features and advantages will emerge from the drawing and the description of it.

#### Detailed Description

Figure 1 shows a short-message center 2, which receives a short message 6 from a mobile station 1. The format is a regular point-to-point short message 6, but in the invention, it is declared a Cell Broadcast message by the subscriber 1. This can be achieved by setting a certain parameter in the SMS message. Another parameter is also in the SMS message that determines the area into which the Cell Broadcast message is to be beamed.

The SMS 6 declared a Cell Broadcast message goes to a coupling instance 3 connected to the short-message center 2, in which the necessary tests, format adjustments or conversions of the message are done before it is forwarded in a suitable format to the Cell Broadcast Center 4. The Cell Broadcast Center 4 takes the necessary measures, which are known, so that the CB message 7 is beamed into the predetermined area to the mobile station 5 that is found there.

The coupling instance 3 can contain other devices 8, which are responsible for billing the service, for example, or can be connected to them.

There can also be an authentication/filter instance 9 that checks the subscriber's authorization to use this service.

In one specific application, the authorized mobile phone subscriber can be given the ability to produce cell broadcast messages himself, for example in connection with a CB (small) display service. All that is needed for subscription/use is authorization to use the regular SNS services (SMS-MO, SMS-MT).

The area in which the CB message 7 is valid, the so-called CB area, is determined by giving the (Telekom) local dialing prefix, the postal code or the vehicle license number in the SMS PP message sent to the short-message center 2.

Legend for Drawings

- 1 Mobile station (SMS PP sender)
- 2 Short-message Center (SMSC)
- 3 Coupling instance
- 4 Cell Broadcast Center (CBC)
- 5 Mobile Stations (CB receivers)
- 6 SMS PP message
- 7 CB message
- 8 Accounting instance
- 9 Authentication/filter instance